UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,766	11/08/2001	Brad R. Lewis	30014200-1002	3626

			EXAMINER
26263	7590	03/25/2005	NAHAR, QAMRUN

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ART UNIT	PAPER NUMBER
2191	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/007,766	LEWIS ET AL.
	Examiner	Art Unit
	Qamrun Nahar	2124

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>08 November 2001</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-26</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-26</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>08 November 2001</u> is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-26 have been examined.

Drawings

2.   The drawings are objected to because there is no Figure 15. Corrected drawing

sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to

avoid abandonment of the application. Any amended replacement drawing sheet should

include all of the figures appearing on the immediate prior version of the sheet, even if

only one figure is being amended. The figure or figure number of an amended drawing

should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate

figure must be removed from the replacement sheet, and where necessary, the remaining

figures must be renumbered and appropriate changes made to the brief description of the

several views of the drawings for consistency. Additional replacement sheets may be

necessary to show the renumbering of the remaining figures. Each drawing sheet

submitted after the filing date of an application must be labeled in the top margin as

either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes

are not accepted by the examiner, the applicant will be notified and informed of any

required corrective action in the next Office action. The objection to the drawings will

not be held in abeyance.

Specification

3.   The disclosure is objected to because of the following informalities: "February 4,

2001" on pg. 1, line 3 of par. 2 and line 4 of par. 3 should be "February 4, **1999**".

        Appropriate correction is required.

4.   The disclosure is objected to because of the following informalities: under "Brief

Description of the Drawings", there is no description for Figures 15A and 15B.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

6.   Claims 6, 14 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

7.   Claims 6 and 17 recite the limitation "**the** nodes" in line 1 of the claims. There is

insufficient antecedent basis for this limitation in the claims. Therefore, this limitation is

interpreted as "nodes are assigned to the blocks".

8.   Claim 14 recites the limitation "the dependency arc" in line 2 of the claim. There

is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation

is interpreted as "a dependency arc representing the determined dependency".

Claim Rejections - 35 USC § 102

9.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10.   Claims 1-4, 6-15 and 17-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Calder (U.S. 5,963,972).

Per Claim 1:

The Calder patent discloses:

- **dividing the memory into blocks** (column 4, lines 29-40)

- **assigning at least a portion of the data and at least one code segment to each block** (column 3, lines 56-62; Table 1 in column 4, lines 8-17; and see Figure 4 for the mapping of the data and code segment to the cache memory)

- **determining whether dependencies exist among the blocks such that a first block depends on data assigned to a second block; and displaying a graph comprising the blocks and the determined dependencies** (column 3, lines 56-66; column 7, lines 6-56; column 8, lines 10-54; and column 12, lines 25-37).

Per Claim 2:

The Calder patent discloses:

- wherein the step of displaying comprises the step of displaying a graph comprising

nodes assigned to the blocks and dependency arcs representing the determined

dependencies (column 3, lines 56-66; column 7, lines 6-56; column 8, lines 10-54; and

column 12, lines 25-37).

Per Claim 3:

The Calder patent discloses:

-. wherein the step of displaying further comprises the step of presenting the

dependency arcs using a satisfied dependency visualization when the determined

dependency is satisfied, and presenting the dependency arcs using an unsatisfied

dependency visualization when the determined dependency is unsatisfied (column 5,

lines 36-41).

Per Claim 4:

The Calder patent discloses:

- further comprising the steps of: receiving a node selection specifying a selected one

of the nodes; determining unmet dependencies for the selected node; and displaying

in a visually distinctive manner the unmet dependencies in the graph (column 5,

lines 36-49).

Per Claim 6 (as best understood):

The Calder patent discloses:

**- wherein nodes are assigned to the blocks include executed nodes and unexecuted
nodes, and wherein the step of displaying further comprises the step of displaying
the unexecuted nodes using an unexecuted visualization and the executed nodes
using an executed visualization** (column 5, lines 36-49).

Per Claim 7:

The Calder patent discloses:

**- wherein the data includes a data structure, and wherein the step of displaying
further comprises the step of: facilitating visualization of at least a portion of the
data structure accessed by at least one of the code segments by graphically
presenting at least a portion of the data structure and accentuating the portion of
the data structure accessed by the at least one code segment** (column 5, lines 36-49).

Per Claim 8:

The Calder patent discloses:

**- representing the data flow program as a graph comprising nodes and node
dependencies between the nodes; and displaying the graph to facilitate visualization**

of the data flow program (column 3, lines 56-66; column 7, lines 6-56; column 8, lines 10-54; and column 12, lines 25-37).

Per Claim 9:

The Calder patent discloses:

- **wherein the nodes include executed nodes and unexecuted nodes, and wherein the step of displaying comprises the step of displaying the unexecuted nodes with an unexecuted visualization and displaying the executed nodes with an executed visualization** (column 5, lines 36-49).

Per Claim 10:

The Calder patent discloses:

- **wherein the nodes include executing nodes, and wherein the step of displaying comprises the step of displaying the executing nodes with an executing visualization** (column 5, lines 36-49).

Per Claim 11:

The Calder patent discloses:

- **wherein the node dependencies include satisfied dependencies and unsatisfied dependencies, and wherein the step of displaying comprises the steps of displaying**

the unsatisfied dependencies using an unsatisfied dependency visualization, and

displaying the satisfied dependencies using a satisfied dependency visualization

(column 5, lines 36-41).

Per Claims 12-13, 14 (as best understood), 15, 17 (as best understood) & 18:

These are computer-readable medium versions of the claimed method discussed

above (claims 1-4 and 6-7, respectively), wherein all claim limitations also have been

addressed and/or covered in cited areas as set forth above. Thus, accordingly, these

claims are also anticipated by Calder.

Per Claim 19:

This is another version of the claimed method discussed above (claims 1 and 6),

wherein all claim limitations also have been addressed and/or covered in cited areas as set

forth above, including "storing data read and data write identifiers for each code segment,

the data read and data write identifiers identifying at least a portion of the data read or

written by the code segment" (column 4, lines 29-34) and "initiating execution of the

code segments" (column 5, lines 36-49). Thus, accordingly, this claim is also anticipated

by Calder.

Per Claim 20:

This is a data processing system version of the claimed method discussed above

(claims 1 and 2), wherein all claim limitations also have been addressed and/or covered

in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Calder.

Per Claims 21-22:

These are data processing system versions of the claimed method discussed above (claims 6 and 3, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Calder.

Per Claim 23:

This is a data processing system version of the claimed method discussed above (claims 1 and 2), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above, including "means for apportioning a memory into regions and associating the data and the code segments with the regions" (column 3, lines 56-62; Table 1 in column 4, lines 8-17; and see Figure 4 for the mapping of the data and code segment to the cache memory). Thus, accordingly, this claim is also anticipated by Calder.

Per Claim 24:

This is a computer readable memory device version of the claimed method discussed above, claim 1, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Calder.

Per Claim 25:

The Calder patent discloses:

- wherein the data structure further comprises: a processed flag that indicates whether at least one of the nodes is executed or unexecuted (column 5, lines 36-49).

Claim Rejections - 35 USC § 103

11.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12.   Claims 5, 16 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Calder (U.S. 5,963,972) in view of Cai (U.S. 6,349,363).

Per Claim 5:

The rejection of claim 2 is incorporated, and further, Calder does not explicitly teach providing for execution of the code segments using threads; receiving a thread selection specifying at least one of the threads; and displaying nodes executed by the at least one thread. Cai teaches providing for execution of the code segments using threads; receiving a thread selection specifying at least one of the threads; and displaying nodes executed by the at least one thread (column 7, lines 30-40).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by Calder to include the step of providing for execution of the code segments using threads; receiving a thread selection specifying at least one of the threads; and displaying nodes executed by the at least one thread using the teaching of Cai. The modification would be obvious because one of ordinary skill in the art would be motivated to provide improved memory performances (Cai, column 1, lines 61-67 to column 2, lines 1-2).

Per Claim 16:

This is a computer-readable medium version of the claimed method discussed above, claim 5, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claim 26:

This is a computer readable memory device version of the claimed method discussed above, claim 5, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Conclusion

13.   Any inquiry concerning this communication from the examiner should be directed to Qamrun Nahar whose telephone number is (571) 272-3730. The examiner can normally be reached on Mondays through Thursdays from 8:30 AM to 6:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kakali Chaki, can be reached on (571) 272-3719. The fax phone number for

the organization where this application or processing is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703) 305-

3900.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

QN
March 16, 2005

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